



UL 1240

STANDARD FOR SAFETY

Electric Commercial Clothes-Drying Equipment

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UL Standard for Safety for Electric Commercial Clothes-Drying Equipment, UL 1240

Fourth Edition, Dated October 4, 2005

Summary of Topics

The revisions dated October 17, 2012 were issued to incorporate the following revised requirements:

- ***Exception to 49.22 for Non-tumbling Dryers***
- ***Correction of a Typographical Error in 33.4***

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin. Changes in requirements are marked with a vertical line in the margin and are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

The revised requirements are substantially in accordance with Proposal(s) on this subject dated March 30, 2012.

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UL 1240

Standard for Electric Commercial Clothes-Drying Equipment

Prior to the first edition, the requirements for the products covered by this Standard were included in the Standard for Electric Home-Laundry Equipment, UL 560.

The first edition was titled Standard for Electric Coin-Operated Commercial Clothes-Drying Equipment.

First Edition – February, 1974
Second Edition – August, 1979
Third Edition – April, 1994

Fourth Edition

October 4, 2005

This ANSI/UL Standard for Safety consists of the Fourth Edition including revisions through October 17, 2012.

The most recent designation of ANSI/UL 1240 as an American National Standard (ANSI) occurred on October 17, 2012. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or effective date information.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <http://csds.ul.com>.

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INTRODUCTION

1 Scope

1.1 These requirements cover electric commercial, industrial, and institutional clothes-drying equipment intended for use in accordance with the National Electrical Code, NFPA 70. Equipment covered by this Standard is not intended for use by the general public, but only by trained or supervised personnel.

1.2 These requirements do not cover coin-operated clothes-drying equipment, flatirons, ironing machines, water heaters, water softeners, dry-cleaning machines, garment-finishing machines, clothes washers, or other equipment covered by requirements separate from this standard.

1.3 Appliances and field-attached accessories including those that utilize some other source of energy – such as gas or steam– in addition to electric energy are investigated under these requirements and under such additional requirements as are applicable to the appliance under consideration.

2 References

2.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

2.2 In the following text, a requirement that applies only to a specific class of equipment is so identified by a specific reference in that requirement to the class or classes of appliances involved. Absence of such specific reference or use of the term appliance indicates that the requirement applies to all classes of appliances unless the context indicates otherwise.

2.3 In the following text, a specific requirement pertaining to a particular appliance takes precedence over a corresponding requirement specified as being applicable to all appliances.

3 Glossary

3.1 APPLIANCE, AUTOMATIC – An appliance is considered to be automatically controlled under one or more of the following conditions:

- a) If repeated starting of the appliance, beyond one complete predetermined cycle of operation, to the point where some form of limit switch opens the circuit is independent of any manual control.
- b) If, during any single predetermined cycle of operation, the motor is caused to stop and restart one or more times.
- c) If, upon energizing the appliance, the initial starting of the motor may be intentionally delayed beyond normal, conventional starting.
- d) If, during any single predetermined cycle of operation, automatic changing of the mechanical load may reduce the motor speed sufficiently to reestablish starting-winding connections to the supply circuit.

3.2 APPLIANCE, RECESSED – An appliance intended to:

- a) Be supported by the floor, and

- b) Sit immediately adjacent to a wall in the rear or to sit immediately adjacent to a wall, a cabinet, or another appliance on each side.

If the construction permits, a counter top may cover the appliance and adjacent cabinets and appliances. A recessed appliance is not intended for permanent attachment to the building structure or to adjacent cabinets or appliances.

3.3 APPLIANCE, SEMI-AUTOMATIC – An appliance employing two or more motors is considered to be semiautomatically controlled if:

- a) One or more motors are controlled in accordance with any of the conditions specified in 3.1, and
- b) At least one motor is not controlled in accordance with any of the conditions specified in 3.1.

3.4 APPLIANCE, WALL-INSERT – An appliance intended to be mounted permanently in a wall or other vertical surface of a building or cabinet.

3.5 ENCLOSURE – The part of the product that:

- a) Reduces the accessibility of all or any parts of the product that may otherwise result in a risk of electric shock or injury to persons; or
- b) Retards propagation of flame initiated by electrical disturbances that may occur within the product.

3.6 PART, DECORATIVE – A part used for ornamental purposes only and not as an enclosure or as insulation of electrically live parts.

3.7 PART, FUNCTIONAL – A part that is necessary for the proper functioning of the product, and that is used in such a way that deterioration or breakage of the part would result in a risk of fire, electric shock, or injury to persons.

4 Components

4.1 Except as indicated in 4.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the appliances covered by this standard.

4.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

4.3 A component shall be used in accordance with its rating established for the intended conditions of use.

4.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

5 Units of Measurement

5.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

6 Field-Attached Accessories

6.1 The requirements in 6.2 – 6.8 apply to accessories intended for installation on or connection to an appliance for the purpose of modifying or supplementing the functions of the appliance or accessory.

6.2 An appliance that has provision for the use of an accessory to be attached in the field shall be constructed so that the use of the accessory will not introduce a risk of fire, electric shock, or injury to persons.

6.3 The installation of an accessory by the user shall be restricted to an arrangement that can be accomplished by means of receptacles and plug-in connectors of other than the general-use or specific-purpose type.

6.4 The installation of an accessory by a qualified electrician or serviceman is acceptable if connections are made to existing terminals by use of wire connectors.

6.5 Accessories intended to be field wired shall be provided with a means for connection to the power supply circuit of the appliance as specified in 11.1.1.

6.6 Any installation that requires field rearrangement of components or wiring, cutting or splicing of wiring, or soldering of connections is not acceptable.

6.7 As part of the investigation, an accessory shall be tested and trial-installed to determine that installation is feasible, that the instructions are detailed and correct, and that the use of the accessory will not introduce a risk of fire, electric shock, or injury to persons.

6.8 An appliance that has provision for the field connection of an accessory and a field-attached accessory shall be marked as specified in 49.1 and 49.31 – 49.33, as applicable.

CONSTRUCTION

7 Frame and Enclosure

7.1 An appliance shall be formed and assembled so that it will have the strength and rigidity necessary to resist the abuses to which it may be subjected, without increasing the risk of fire, electric shock, or injury to persons due to total or partial collapse with resulting reduction of spacings, loosening or displacement of parts, or other serious defects.

7.2 An appliance shall be provided with an enclosure of material found by investigation to be acceptable for the application that shall house all parts that may present a risk of fire, electric shock, or injury to persons under any condition of use.

7.3 Among the factors that shall be taken into consideration when judging the acceptability of an enclosure material are its:

- a) Mechanical strength,
- b) Resistance to impact,
- c) Moisture – absorptive properties,
- d) Combustibility, and
- e) Resistance to distortion at temperatures to which the material may be subjected under conditions of normal or abnormal use.

7.4 An enclosure constructed of polymeric material shall comply with the requirements in Polymeric Materials, Section 40.

7.5 For an unreinforced, flat surface, cast metal shall not be less than 1/8 in (3.2 mm) thick, malleable iron shall not be less than 3/32 in (2.4 mm) thick, die-cast metal shall not be less than 5/64 in (2.0 mm) thick.

Exception: Metal of lesser thickness but not less than 3/32 in (2.4 mm), 1/16 in (1.6 mm), and 3/64 in (1.2 mm), respectively, may be acceptable provided the surface under consideration is:

- a) Curved, ribbed, or otherwise reinforced to provide mechanical strength equivalent to that required; or*
- b) Of a size or shape that provides mechanical strength equivalent to that required.*

7.6 An enclosure of sheet metal shall be judged with respect to size, shape, thickness of metal, and acceptability for the application considering the intended use of the complete appliance.

7.7 For an enclosure of sheet metal, sheet steel shall have a minimum thickness of 0.026 in (0.66 mm), aluminum shall have a minimum thickness of 0.036 in (0.91 mm), and copper or brass shall have a minimum thickness of 0.033 in (0.84 mm).

Exception: This requirement does not apply to an area that is relatively small or a surface that is curved or otherwise reinforced.

7.8 At a point where the power-supply conductors enter the enclosure, sheet metal shall not be less than 0.032 in (0.81 mm) thick if uncoated steel, not less than 0.034 in (0.86 mm) if galvanized steel, not less than 0.044 in (1.12 mm) if aluminum, and not less than 0.043 in (1.09 mm) if copper or brass.

7.9 In an appliance as mentioned in the Exception to 7.15, provision shall be made to reduce the likelihood of molten metal, burning insulation, or the like falling upon combustible materials, including the surface on which the appliance is supported.

7.10 The requirement in 7.9 will necessitate the use of a barrier of noncombustible material:

a) Under a motor unless:

- 1) The structural parts of the motor or the appliance provide the equivalent of such a barrier;
- 2) The protection provided with the motor is such that no burning insulation or molten material falls to the surface that supports the appliance when the motor is energized under each of the following fault conditions:
 - i) Open main winding,
 - ii) Open starting winding,
 - iii) Starting switch short-circuited, and
 - iv) Capacitor of permanent-split capacitor motor short circuited – the short circuit is to be applied before the motor is energized, and the rotor is to be locked; or
- 3) The motor is provided with a thermal motor protector – a protective device that is sensitive to temperature and current – that will prevent the temperature of the motor windings from exceeding 125°C (257°F) under the maximum load under which the motor will run without causing the protector to cycle and from exceeding 150°C (302°F) with the rotor of the motor locked.

b) Under wiring, unless it is neoprene- or thermoplastic-insulated.

7.11 The requirement in 7.9 will also necessitate that a switch, a relay, a solenoid, or the like be individually and completely enclosed.

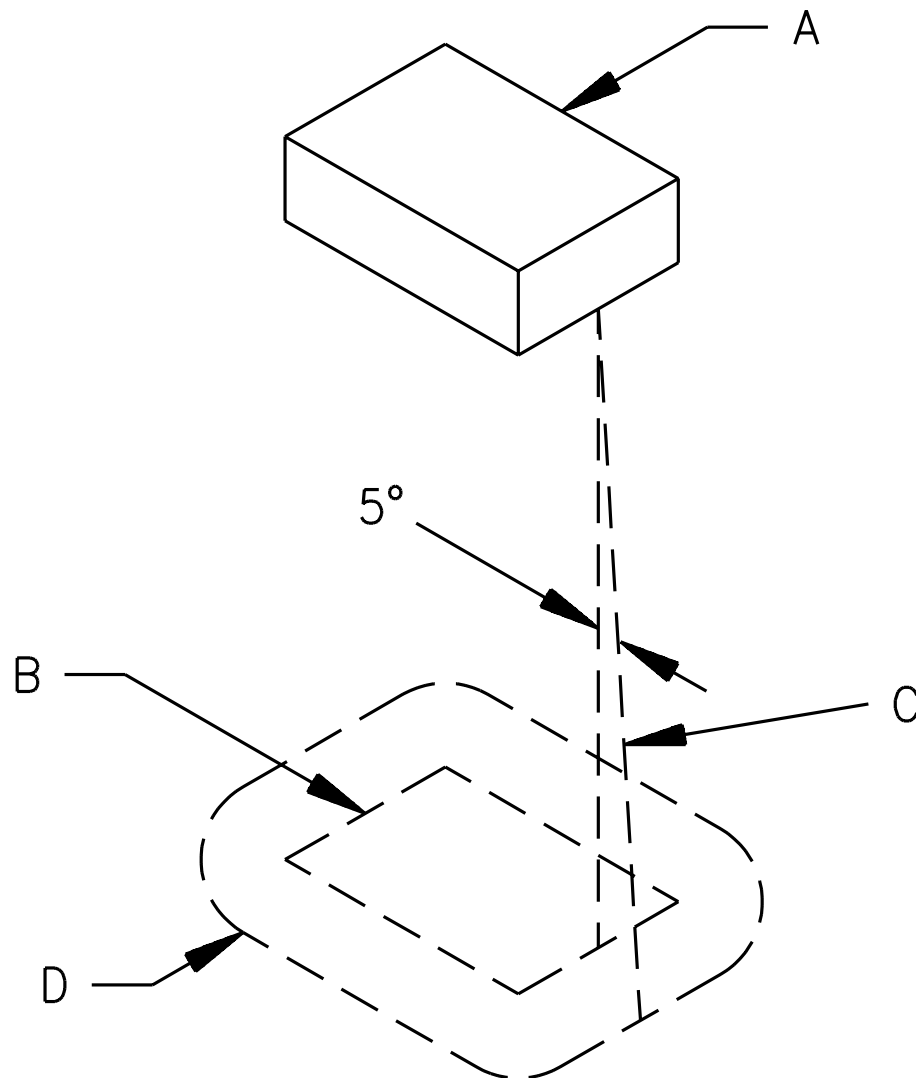
Exception No. 1: The terminals of a switch, a relay, a solenoid, or the like need not comply with this requirement.

Exception No. 2: If malfunction of the component would not result in a risk of fire then such component need not comply with this requirement.

Exception No. 3: If there are no openings in the bottom of the appliance enclosure then this requirement may be waived.

7.12 The barrier mentioned in 7.10 shall be horizontal, shall be located as illustrated in Figure 7.1, and shall have an area in accordance with that illustration.

Figure 7.1
Location and extent of barrier



EB120A

A – Region to be shielded by barrier. This will consist of the entire component if it is not otherwise shielded and will consist of the unshielded portion of a component that is partially shielded by the component enclosure or equivalent.

B – Projection of outline of component on horizontal plane.

C – Inclined line that traces out minimum area of barrier. The line is always tangent to the component, 5 degrees from the vertical, and so oriented that the area traced out on a horizontal plane is maximum.

D – Location (horizontal) and minimum area for barrier. The area is that included inside the line of intersection traced out by the inclined line C and the horizontal plane of the barrier.

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7.13 With reference to the barrier mentioned in 7.10, openings for drainage, ventilation, or the like, may be employed in the barrier if such openings would not permit molten metal, burning insulation, or the like to fall on combustible material.

7.14 An opening in the enclosure, other than in the front of a wall-insert appliance, shall be located or provided with a barrier, baffle, or louver so as to prevent burning insulation, molten metal, or the like, from being expelled through it. A ventilating opening shall not permit the entrance of a 3/8-in (9.5-mm) diameter rod. The distance between any point on the perimeter of an opening for a hose or tube and the nearest point on the outer surface of such hose shall not be more than 1/2 in (12.7 mm), when a hose of the diameter intended for the application is centered in the opening.

7.15 A complete bottom enclosure shall be provided for a free-standing or recessed appliance beneath all wiring and other electrical components not having an individual housing or enclosure.

Exception: An appliance that is constructed so that all blowers discharge into an exhaust duct only provided:

- a) All joints in the duct within the appliance are permanently airtight, and*
- b) The appliance is marked in accordance with 49.28.*

7.16 With reference to the requirements in 7.15, a bottom enclosure is considered to be complete if:

- a) No unused opening has an area of more than 1/4 in² (1.6 cm²), and
- b) The total area of all such openings is no more than 2 in² (12.9 cm²).

7.17 In an appliance other than as mentioned in the Exception to 7.15, arcing parts of a component, such as a switch or thermostat, shall be totally enclosed.

Exception: Arcing parts of a component need not be totally enclosed if:

- a) The component is located in a separate enclosure, such as a console or other enclosure located outside the enclosure surrounding the drum; and*
- b) The unused portion of any opening into the enclosure housing the component is not more than 0.75 in² (4.8 cm²), and the total of all unused openings into that enclosure is not more than 3 in² (19.4 cm²).*

7.18 The bottom of the enclosure of a wall-insert appliance shall be complete and without openings.

8 Accessibility of Uninsulated Live Parts and Film-Coated Wire

8.1 To reduce the likelihood of unintentional contact that may involve a risk of electric shock from an uninsulated live part or film-coated wire, an opening in an enclosure shall comply with either (a) or (b).

- a) For an opening that has a minor dimension (see 8.5) less than 1 in (25.4 mm), such a part or wire shall not be contacted by the probe illustrated in Figure 8.1.
- b) For an opening that has a minor dimension of 1 in (25.4 mm) or more, such a part or wire shall be spaced from the opening as specified in Table 8.1.

Exception: A motor need not comply with these requirements if the integral enclosure of the motor complies with the requirements in 8.2.

Table 8.1
Minimum acceptable distance from an opening to a part that may involve a risk of electric shock

Minor dimension of opening ^a		Minimum distance from opening to part	
in ^b	(mm)	in ^b	(mm)
3/4 ^c	(19.1)	4-1/2	(114.0)
1 ^c	(25.4)	6-1/2	(165.0)
1-1/4	(31.8)	7-1/2	(190.0)
1-1/2	(38.1)	12-1/2	(318.0)
1-7/8	(47.6)	15-1/2	(394.0)
2-1/8	(54.0)	17-1/2	(444.0)
d		30	(762.0)

^a See 8.5.
^b Between 3/4 in (19.1 mm) and 2-1/8 in (54 mm), interpolation is to be used to determine a value between values specified in the table.
^c Any dimension less than 1 in (25.4 mm) applies to a motor only.
^d More than 2-1/8 in (54 mm), but not more than 6 in (152.0 mm).

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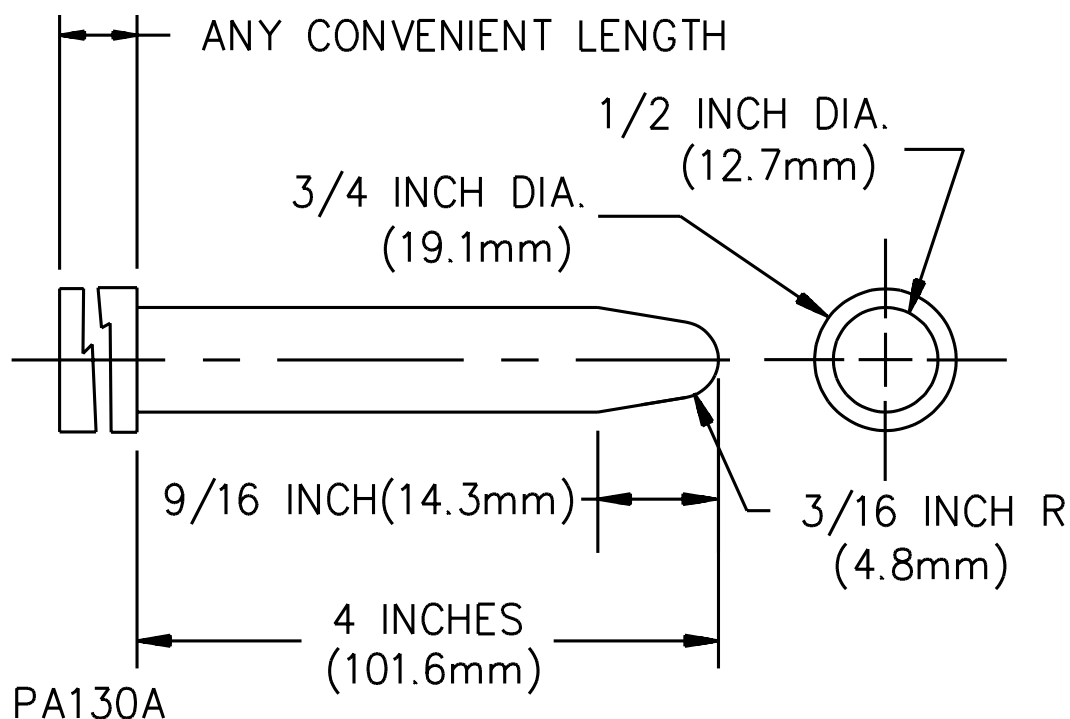


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8.2 With respect to an integral enclosure of a motor as mentioned in the Exception to 8.1:

- a) An opening that has a minor dimension (see 8.5) less than $3/4$ in (19.1 mm) is acceptable if:
- 1) Film-coated wire cannot be contacted by the probe illustrated in Figure 8.3;
 - 2) In a directly accessible motor (see 8.6), an uninsulated live part cannot be contacted by the probe illustrated in Figure 8.4; and
 - 3) In an indirectly accessible motor (see 8.6), an uninsulated live part cannot be contacted by the probe illustrated in Figure 8.2.
- b) An opening that has a minor dimension of $3/4$ in (19.1 mm) or more is acceptable if a part or wire is spaced from the opening as specified in Table 8.1.

Figure 8.2
Probe for uninsulated live parts



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Figure 8.3
Probe for film-coated wire

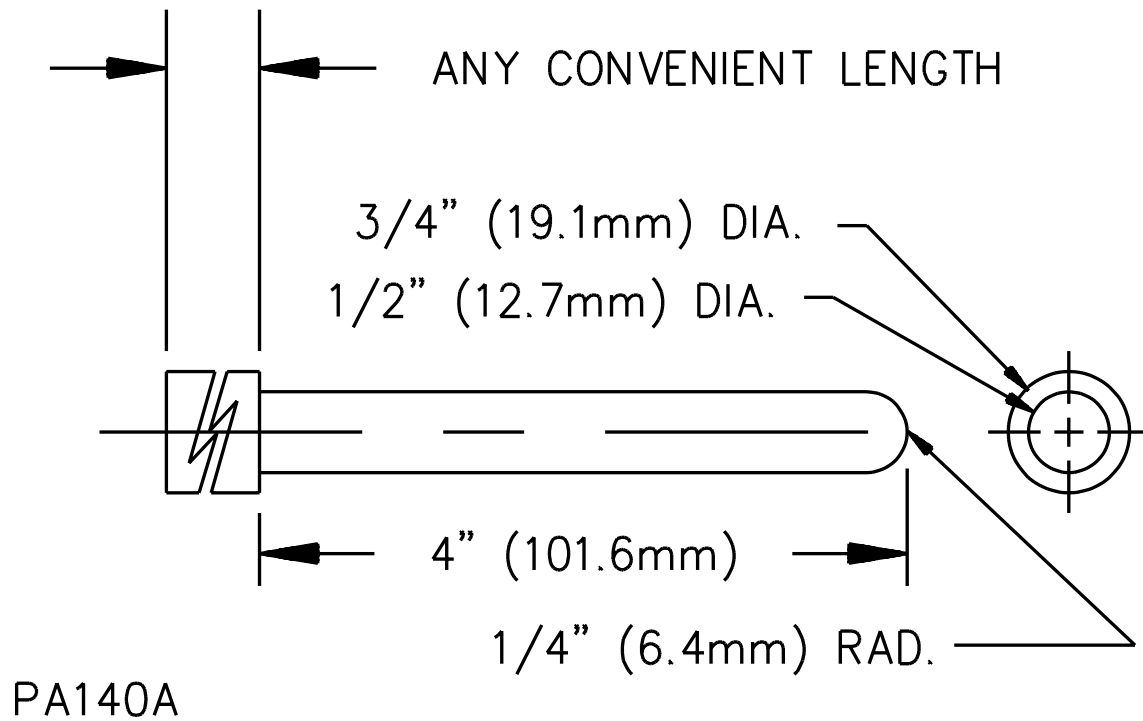
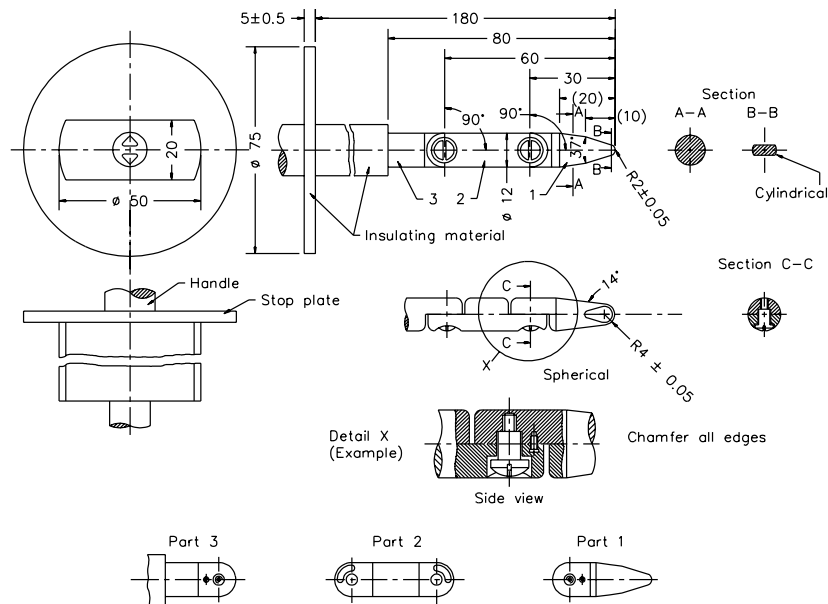


Figure 8.4
International Electrotechnical Commission (IEC) articulate accessibility probe with stop plate
All dimensions in millimeters
Courtesy of IEC



8.3 The probes mentioned in 8.1 and 8.2 and illustrated in Figures 8.1, 8.2, 8.3, and 8.4 shall be applied to any depth that the opening will permit; and shall be rotated or angled before, during, and after insertion through the opening to any position that is necessary to examine the enclosure. The probes illustrated in Figures 8.1 and 8.4 shall be applied in any possible configuration; and, if necessary, the configuration shall be changed after insertion through the opening.

8.4 The probes mentioned in 8.1 and 8.2 shall be used as measuring instruments to judge the accessibility provided by an opening, and not as instruments to judge the strength of a material; they shall be applied with the minimum force necessary to determine accessibility.

8.5 With reference to the requirements in 8.1 and 8.2, the minor dimension of an opening is the diameter of the largest cylindrical probe having a hemispherical tip that can be inserted through the opening.

8.6 With reference to the requirements in 8.2:

- a) An indirectly accessible motor is a motor that is:
 - 1) Accessible only by opening or removing a part of the outer enclosure, such as a guard or panel, that can be opened or removed without using a tool, or
 - 2) Located at such a height or is otherwise guarded or enclosed so that it is unlikely to be contacted.
- b) A directly accessible motor is a motor that:
 - 1) Can be contacted without opening or removing any part, or

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2) Is located so as to be accessible to contact.

8.7 With reference to the requirements in 8.1 and 8.2, insulated brush caps are not required to be additionally enclosed.

8.8 The requirements in 8.1 and 8.2 apply to the back of a free-standing appliance and to the back and sides of a recessed appliance. They do not apply to the bottom of a free-standing or recessed appliance if the front, sides, and back of the appliance extend substantially to the surface upon which the appliance rests.

8.9 A protective device, such as a fuse, the functioning of which requires renewal or replacement, shall be in a readily accessible location.

8.10 A protective device shall be wholly inaccessible from outside the appliance without opening a door or cover.

Exception: The operating handle of a circuit breaker, the operating button of a manually operable motor protector, and similar parts may project outside the appliance enclosure.

8.11 A door or a cover of an enclosure shall be hinged or otherwise attached in an equivalent manner if it gives access to any overload protective device, the functioning of which requires renewal, or if it is necessary to open the cover in connection with the operation of the protective device.

8.12 Means shall be provided for holding the door or cover over a fuseholder in a closed position, and the door or cover shall be tight fitting.

9 Mechanical Assembly

9.1 An appliance shall be assembled so that it will not be adversely affected by the vibration of normal operation. Brush caps shall be tightly threaded or otherwise designed to reduce the likelihood of loosening.

9.2 A switch, a lampholder, an attachment-plug receptacle, a motor-attachment plug, or similar component shall be mounted securely and shall be prevented from shifting or turning.

Exception No. 1: A switch need not be prevented from turning if all four of the following conditions are met:

- a) The switch is of a plunger or other type that does not tend to rotate when operated. A toggle switch is considered to be subject to forces that tend to rotate the switch during normal operation of the switch.*
- b) Means for mounting the switch make it unlikely that operation of the switch will loosen it.*
- c) Spacings are not reduced below the minimum acceptable values if the switch rotates.*
- d) Normal operation of the switch is by mechanical means rather than by direct contact by persons.*

Exception No. 2: A lampholder of the type in which the lamp cannot be replaced, such as a neon pilot or indicator light in which the lamp is sealed in by a nonremovable jewel, need not be prevented from turning if rotation cannot reduce spacings below the minimum acceptable values.